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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10-029,738	12/18/2001	Jerome Leloup	SP00-357	5054

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CORNING INCORPORATED
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EXAMINER

DOROSHENK, ALEXA A

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 05/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,738

Applicant(s)

LELOUP ET AL.

Examiner

Alexa A. Doroshenk

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 24 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 9 continues to be rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 9, the term "co-current" is unclear as only one stream has been recited. This raises the question, co-current to what? For examination purposes, the examiner has treated the claim as wherein the flow is in a single direction.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 7-9 continue to be rejected under 35 U.S.C. 102(b) as being anticipated by Ruff et al. (3,208,131) as presented in Paragraph 5 of Paper No. 5.
5. Claims 7-9 continue to be rejected under 35 U.S.C. 102(b) as being anticipated by Hervet et al. (3,785,781) as presented in Paragraph 6 of Paper No. 5.
6. Claims 1, 2, 4 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Stach et al. (DE 42 43 424 A1).

With respect to claim 1, Stach et al. discloses a reactor comprising:

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a reactor vessel (1) for processing a gas-liquid feed stream (see English Language Abstract);

a catalyst bed within the vessel (1) comprising two or more sections (2, 2') of structured honeycomb catalyst wherein the sections are disposed flow-connected end-to-end (see fig. 1, 5 and 6);

each section having inlet and outlet ends, a plurality of parallel open-ended honeycomb channels (fig. 5) bounded by catalytically active wall surfaces (see English Language Abstract), wherein the channels of each section are oriented along a common flow axis (see figure 1); and

the channels of the second section being offset from the first section such that at least a majority of the channels in the first section have outlet ends opening onto at least one channel wall segment and at least two adjoining channel openings at the inlet end of the second catalyst section (see figure 2 and 4).

With respect to claim 2, Stach et al. discloses wherein the first catalyst section comprises channels of substantially the same channel size and channel cross-sectional shape as of the second catalyst section (see fig. 2 and 4).

With respect to claim 4, Stach et al. discloses wherein the channels in the second catalyst section are rotationally offset from the channels in the first catalyst section.

With respect to claims 7-9, Stach et al. discloses all of the structural limitations as presented with regard to claim 1. As to the method limitations, Stach et al. further discloses the parallel (reads on co-current) flow of a stream through the apparatus

wherein the stream is introduced to the vessel, directed through the honeycomb channels, catalyst activates, the stream is subdivided into parallel channels and discharged (see English Language Abstract).

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stach et al. (DE 42 43 424 A1) in view of Hervert et al. (3,785,781).

Stach et al. does not disclose wherein the size and shape of the channels of one catalyst section can be different from another.

Hervert et al. teaches a similar fluid reactor and recognizes that the size and shape of the channels are result effective variables (col. 5, lines 33-65). It has been held that to modify a known result effective variable is an obvious variation of a known device. In re Boesch.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stach et al. (DE 42 43 424 A1), as applied to claim 1 above, and further in view of Masaaki (JP 57150443 A).

Stach et al. recognizes the desire to offset the channels of the individual honeycomb elements (col. 5, lines 38-61) but does not disclose wherein the second catalyst section is laterally offset from the first catalyst section.

Masaaki teaches various positions of honeycomb catalyst elements, including rotationally offset (3) as well as laterally offset (figure 5) honeycomb bodies, as well as

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the advantage of good efficiency and less catalyst breakdown (see English Language Abstract). Thus, it is established by Masaaki that rotationally and laterally offset honeycomb catalyst sections are functionally equivalent structures. It would have been obvious to one of ordinary skill in the art at the time the invention was made to look toward Masaaki for additional means of catalyst section offsetting as Masaaki also teaches advantages to such catalyst design and it is merely the selection of known a catalyst section offsetting functionally equivalent structure known to be effective in the art.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stach et al. (DE 42 43 424 A1), as applied to claim 1 above, and further in view of Ruff et al. (3,208,131).

Stach et al. discloses all of the structural elements as discussed with regard to claim 1 above, but does not disclose a channels separator between two sections.

Ruff et al. discloses a similar catalytic reactor with a plurality of offset honeycomb catalyst sections and teaches a channeled separator (5) between adjacent sections and teaches wherein such a spacer provides further change in the turbulent action of the stream flowing there through (col. 5, lines 63-75). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide spacers between the catalyst sections of Stach et al. in order to provide further turbulent action, as taught to be desired in such a device by Ruff et al.

11. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hervert et al. (3,785,781) in view of Stach et al. (DE 42 43 424 A1).

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With respect to claim 1, Hervert et al. discloses a reactor comprising:

a reactor vessel (2) for processing a fluid (col. 1, lines 4-5);

a catalyst bed within the vessel (27) comprising two or more sections of structured honeycomb catalyst wherein the sections are disposed flow-connected end-to-end (col. 3, lines 46-59);

each section having inlet and outlet ends, a plurality of parallel open-ended honeycomb channels (col. 4, lines 13-16) bounded by catalytically active wall surfaces (col. 3, lines 46-47), wherein the channels of each section are oriented along a common flow axis (see figure 4); and

the channels of the second section being offset from the first section such that at least a majority of the channels in the first section have outlet ends opening onto at least one channel wall segment and at least two adjoining channel openings at the inlet end of the second catalyst section (see figure 1).

Stach et al. teaches a device for catalytic conversion of a liquid-gas medium in parallel flow (see English Language Abstract) and demonstrates wherein the catalyst body comprises off-set honeycomb catalyst bodies (see figures 1, 2, 4 and 5).

Hervert et al. discloses wherein the device is for converting a fluid, particularly a fluid such as exhaust gases, but does not limit what fluids can be used in the device. The examiner holds that the statement of "a fluid" which can be catalytically converted by the device of Hervert et al. reads on a broad group of fluids, including the "a gas-liquid medium" taught by Stach et al. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select any fluid, include that taught by

Stach et al., as it is merely the selection of fluids known to effectively be converted in such an apparatus.

With respect to claim 2, Hervert et al. discloses wherein the channels in adjacent sections can be of any size and shape (col. 4, lines 35-36), thus not precluding the size and shape from being the same in adjacent sections. Additionally, Hervert et al. recognizes that the size and shape of the channels are result effective variables (col. 5, lines 33-65). It has been held that to modify a known result effective variable is an obvious variation of a known device. In re Boesch.

With respect to claim 3, Hervert et al. discloses wherein the channels of the first catalyst section and the second catalyst section are of differing size (col. 4, lines 38-43) and cross-sectional shape (col. 4, lines 35-36).

With respect to claim 4, Hervert et al. discloses wherein the channels of the second catalyst section are rotationally offset from the channels in the first section (see figure 1).

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hervert et al. (3,785,781) in view of Stach et al. (DE 42 43 424 A1), as applied to claim 1 above, and further in view of Masaaki (JP 57150443 A).

Hervert et al. recognizes the desire and advantages to offsetting the channels of the individual honeycomb elements (col. 5, lines 38-61) but does not disclose wherein the second catalyst section is laterally offset from the first catalyst section.

Masaaki teaches various positions of honeycomb catalyst elements, including rotationally offset (3) as well as laterally offset (figure 5) honeycomb bodies, as well as

the advantage of good efficiency and less catalyst breakdown (see English Language Abstract). Thus, it is established by Masaaki that rotationally and laterally offset honeycomb catalyst sections are functionally equivalent structures. It would have been obvious to one of ordinary skill in the art at the time the invention was made to look toward Masaaki for additional means of catalyst section offsetting as Masaaki also teaches advantages to such catalyst design and it is merely the selection of known a catalyst section offsetting functionally equivalent structure known to be effective in the art.

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hervert et al. (3,785,781) in view of Stach et al. (DE 42 43 424 A1), as applied to claim 1 above, and further in view of Ruff et al. (3,208,131).

Hervert et al. discloses all of the structural elements as discussed with regard to claim 1 above, but does not disclose a channels separator between two sections.

Ruff et al. discloses a similar catalytic reactor with a plurality of offset honeycomb catalyst sections and teaches a channeled separator (5) between adjacent sections and teaches wherein such a spacer provides further change in the turbulent action of the stream flowing there through (col. 5, lines 63-75). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide spacers between the catalyst sections of Hervert et al. in order to provide further turbulent action, as taught to be desired in such a device by Ruff et al.

Response to Arguments

Drawings

The objection to the drawings is withdrawn due to applicant's arguments.

35 USC 112, Second Paragraph

The rejection of claim 5 under 35 USC 112, second paragraph is withdrawn due to applicant's arguments.

The rejection of claim 9 under 35 USC 112, second paragraph is maintained. Though applicant has provided arguments that the term co-current is well known in the art to be wherein the gas and liquid feed stream components flow in the same direction, there is no positive recitation of both a gas and a liquid component of a feed stream in the body of the claim. Therefore, the scope of the claim the term remains unclear. The examiner notes that the stream in the preamble is not given patentable weight as it is not a positive recitation the body of the claim.

Art Rejections

Applicant argues that the methods of Ruff et al. and Hervert et al. do not teach or suggest a gas-liquid reactor for processing a gas-liquid stream and therefore do not read on the claims.

The examiner agrees that amendment of claim 1, which positively recites a gas-liquid stream, overcomes the rejections of claims 1-6 of Paper No. 5. A new grounds of rejection has been presented above.

With respect to claims 7-9, the examiner notes that there is no positive recitation of a gas-liquid stream in the claims and therefore the rejections are maintained.

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The examiner is slightly confused as to the purpose of providing the Cybulski reference since this reference has not been used in the art rejections. Applicant appears to use Cybulski as teaching that only uniform and stable distribution of gas and liquid in a monolith is known in the art of gas-liquid reactors and states (page 4 of the response) that applicant has shown that flow disruptions are not detrimental to gas-liquid flow reactors.

The examiner would like to direct applicant's attention to the rejections presented above, especially with regard to Stach (DE 42 43 424 A1) in which offset, and therefore providing flow disruptions, catalyst sections are used in a gas-liquid parallel flow reactor.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

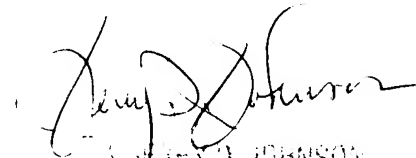
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 703-305-0074. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


AMY D. JOHNSON
EXAMINER
MAY 1 2003

AAD
April 30, 2003